

**PATENT**

Serial No.: 09/160,991  
Filed: September 25, 1998  
Group Art Unit: 3724  
Examiner: Hwei-Sui Payer  
Applicant: Zhang et al.  
Title: CUTTING DIE AND METHOD OF FORMING  
Att. Docket: BERL-18A

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**DECLARATION OF COMMERCIAL SUCCESS  
UNDER 37 C.F.R. '1.132**

I, Graham Bell, hereby state and declare the following:

I am Rotary Die Supervisor of Shorewood Packaging, Smith Falls Division. I have been in the employ of Shorewood Packaging or its predecessor in interest since 1973, and in my present capacity since 1982. Shorewood Packaging is a leading manufacturer in the world of Folding Carton Products. Shorewood Packaging, Smith Falls Division is presently using a cutting die having the name of King Size Outerwrap and product number 100's purchased from Bernal Technologies for cutting our Folding Carton Products. These cutting dies produced by Bernal Technologies are superior to other cutting dies currently available in the market.

By using this die, we have experienced a significantly longer operating life, before repair for worn blades is required, than with any prior cutting die we have used. The commercial impact of this extended wear life is of significant financial and temporal importance. Repeated cutting of our paperboard products by the cutting die blades inevitably wears the blades over time. The worn blades can be repaired to restore them to a shape and sharpness suitable for cutting our product, but this is a very expensive procedure. Once the blades of a cutting die in

our plant are worn, we have to dismantle the die and install a replacement die to be used while the repair of the blades is being performed. Thus, we require two cutting dies to ensure near continuous plant operation. The repair process is a difficult and time consuming endeavor. There is, consequently, an unavoidable downtime in the plant to make the switch between cutting dies, and thus a reduction in plant output. This translates to a loss of revenue. To repair the worn blades, the die must be loaded onto a truck and transported to a repair facility, repaired, and then returned to our plant. The repair operation thus not only causes downtime in the plant to switch the dies, but also requires a great deal of time and cost to transport and perform the repair.

With prior cutting dies, the dies would require repair every 10 million revolutions, on average. With the new cutting die provided by Bernal Technologies, the die requires repair only every 100-200 million revolutions. Thus, we have experienced a wear life of the blades that is 10 to 20 fold greater than cutting dies we have previously used. As a result, we can operate the cutting die 10 to 20 times longer before the plant must experience downtime for switching the dies. The frequency with which we must endure the loss of productivity of the plant and the expense and time of transporting and repairing cutting dies with worn blades is thus significantly reduced. The longer useful life of the blades translates into a huge cost savings for our plant.

Due to the significant impact this cutting die has had on our productivity and repair costs, we have determined that only this new type of cutting die from Bernal Technologies is to be purchased and installed in our plant. Other products are to our knowledge far inferior to this cutting die provided by Bernal Technologies. In my opinion, this die represents a significant advancement in cutting die technology, and fulfills a long felt need for increased wear life that no prior die was able to achieve to such an extent.

Further Declarant sayeth naught.

I hereby declare that all statements made herein of my own knowledge are true  
and that all statements made on information and belief are believed to be true and further that  
these statements were made with knowledge that willful false statements and the like may  
jeopardize the validity of the application.

Date: \_\_\_\_\_

\_\_\_\_\_  
Name of Declarant

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Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**DECLARATION OF COMMERCIAL SUCCESS  
UNDER 37 C.F.R. 1.132**

I, Paul S. Madill, hereby state and declare the following:

I am President and CEO of Bernal Technologies Inc., a subsidiary of the owner/assignee of the above-identified patent application. I have been in the employ of Bernal Technologies Inc. or its predecessor in interest since 1966, and in my present capacity since 1999. Bernal Technologies Inc. is a leading manufacturer in the world of cutting dies. Bernal Technologies Inc. sold to Shorewood Packaging and Glad Products, Inc., a cutting die having the name of King Size Outer Wrap and Handle Tie Product and product name 100's and large kitchen for cutting their paperboard products. The sale occurred in 1999 and 2000. This cutting die was produced by Bernal Technologies in accordance with the method set forth and claimed in the present application. Specifically, a rotary die cylinder of a soft material was formed, and a hard material was laser cladded onto a rotary die cylinder in a pattern as requested by Shorewood and Glad Products, Inc. for their product. The clad material was then shaped to form a sharp blade. Even more specifically, a rotary die cylinder of a 4150 steel of HRC 28 was formed, and a powdered CPM10V of HRC 60 was cladded onto the rotary die cylinder using a CO<sub>2</sub> laser. The clad material was then shaped by EDM to form a sharp blade.

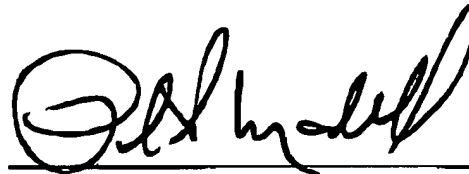
It is this new die which is the subject of the Declaration of Graham Bell of Shorewood and Roy Saunders of Glad Products, Inc. filed herewith, and which provides the advantages set forth therein. These advantages are provided by and are due to our manufacturing process of heating the die body surface with a laser and laser cladding a blade material that is harder than the die body onto the heated area to build up a hard, near net shape blade which is then shaped with minimal machining.

Further Declarant sayeth naught.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date:

6/21/2001



Paul S. Madill, President and CEO  
Bernal Technologies-Bermaxx, LLC

madill.s@bermaxx.com